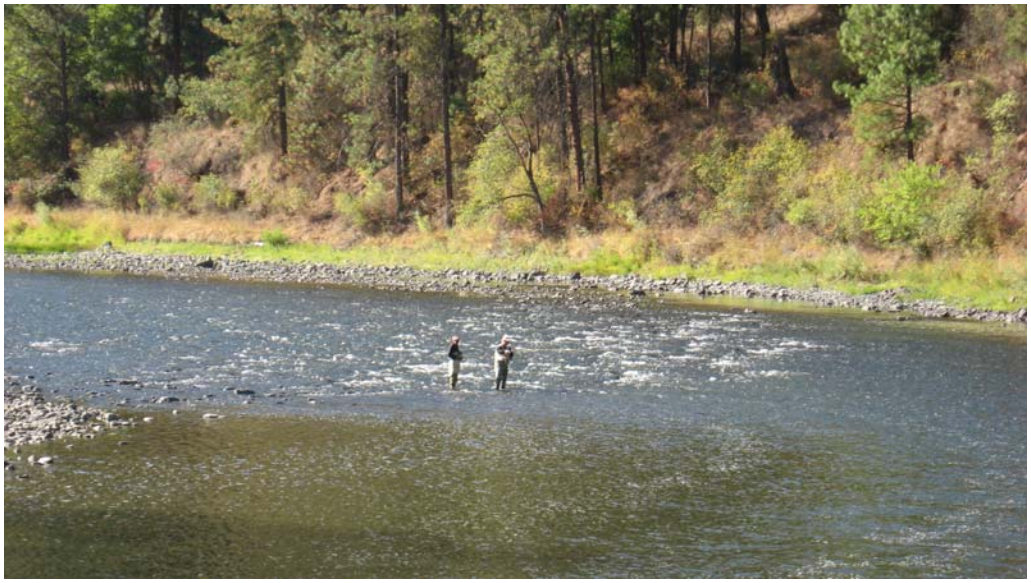
LOWER SNAKE RIVER COMPENSATION PLAN:
Summer Steelhead Creel Surveys on the Grande Ronde, Wallowa, and Imnaha Rivers for the 2007-08 Run Year

Oregon Department of Fish and Wildlife
Fish Research and Development, NE Region



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OREGON
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LOWER SNAKE RIVER
COMPENSATION PLAN

This report is available at: http://www.fws.gov/lsnakecomplan/reports/ODFWreports.html

Front cover photo of steelhead anglers on the lower Grande Ronde River in September 2007 by Jared Sisemore.

ANNUAL PROGRESS REPORT

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PROJECT TITLE: Summer Steelhead Creel Surveys on the Grande Ronde, Wallowa, and Imnaha Rivers for the 2007-08 Run Year

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PREFACE

The creel sampling period was from 1 September 2007 to 15 April 2008, funded under contract numbers 1411-7-J009 and 141108-J009. The report summarizes statistical angler surveys conducted during the summer steelhead angling season in major fishing areas on the Grande Ronde, Wallowa, and Imnaha rivers. Hatchery adult steelhead harvested during the 2007-2008 run year were primarily from the 2004 and 2005 brood years. Results of creel surveys conducted prior to fall 2007 are reported in previous Lower Snake River Compensation Plan evaluation annual reports (Carmichael et al. 1986, 1987, 1988, 1989, 1990; Flesher et al. 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1999, 2000, 2001, 2004a, 2004b, 2005, 2007, 2008a, 2008b, and 2009), many of which are available at: http://www.fws.gov/lsnakecomplan/reports/ODFWreports.html. The steelhead angling season surveyed in this report was open from 1 September 2007 to 15 April 2008 in the Grande Ronde and Imnaha river basins. Only adipose fin-clipped fish could be harvested during this period.

ACKNOWLEDGMENTS

We would like to thank Mary Buckman for the statistical design and analysis of the data, Jared Sisemore and Steve Jeffers for their dedication in conducting the surveys, and Steve Yundt for reviewing the document. We would also like to thank Joe Bumgarner (Washington Department of Fish and Wildlife) for coordinating and Mike Herr for conducting the Lower Grande Ronde survey during spring 2008. This project was financed as a cooperative agreement between the Oregon Department of Fish and Wildlife and the U.S. Fish and Wildlife Service under the Lower Snake River Compensation Plan.

CONTENTS

LIST OF FIGURES

LIST OF FIGURES (continued)

LIST OF TABLES

LIST OF APPENDICES

SUMMARY

In the recreational summer steelhead fisheries during the 2007-08 run year, angler effort was similar to the previous year on the lower Grande Ronde River and higher on the Imnaha River, and both were higher than the overall average since surveys began in 1985. Harvest and total catch were lower than the previous year but higher than the average on the lower Grande Ronde, and were both the highest observed since surveys began on the Imnaha River. The number of wild steelhead caught and released on the lower Grande Ronde was lower than the previous year but the percent of wild fish in the catch was similar. However, in the Imnaha River fishery the number of wild steelhead caught and released is unknown due to unmarked hatchery returns in recent years. Catch rates were similar to the previous year on the lower Grande Ronde and Wallowa rivers and at Rondowa (mouth of the Wallowa River), and all were higher than the overall average of 10-13 hours per fish. However, the Imnaha River fishery had one of the highest estimated catch rates since surveys began. Hatchery fish dominated the catch during the fall and winter months on the lower Grande Ronde River and during the spring months on the Wallowa River and at Rondowa, and hatchery fish contributed substantially to the Imnaha River fishery, although many hatchery fish were not clipped and thus were indistinguishable from wild fish. Anglers harvested more one-ocean than two-ocean hatchery steelhead in all fisheries, more males in the lower Grande Ronde and Wallowa River fisheries, and more females at Rondowa and in the Imnaha River fishery. The percent of local resident anglers participating in summer steelhead fisheries increased in the Imnaha basin fishery from the prior year and decreased in the Grande Ronde basin fisheries, with the Rondowa fishery having the highest percent of non-local and out-of state anglers. We sampled adipose and left ventral and right ventral fin-clipped and coded-wire-tagged (AdLV+CWT and AdRV+CWT) summer steelhead in both the Grande Ronde and Imnaha basin fisheries. Expanded estimates for the Wallowa and Rondowa fisheries will not be determined until statewide angler harvest tag summaries become available, however harvest, catch, and angler effort for the 2006-07 run year are reported in the appendices. Seventy-seven adult steelhead were recycled back into the Wallowa River fishery from the Big Canyon Facility during the spring 2008 and they provided some additional harvest opportunities for anglers.

INTRODUCTION

Summer steelhead (*Oncorhynchus mykiss*) fisheries in the Grande Ronde and Imnaha river basins were closed in 1974. This closure was prompted by declining adult returns, as indicated by adult counts at Ice Harbor Dam on the Snake River (USACOE 1996), and low steelhead redd counts on index streams in the Grande Ronde and Imnaha river basins (Oregon Department of Fish and Wildlife District Annual Reports 1949-1974). The Lower Snake River Compensation Plan (LSRCP), initiated by congress in 1976, was developed to compensate for losses of anadromous salmonids in the Snake River basin from construction of the four lower Snake River dams built between 1962 and 1976. Thus, the focus of the LSRCP is the Snake River above Lower Granite Dam (Rkm 173), the uppermost of these four dams. One of the primary objectives of the LSRCP in Oregon is to restore historic recreational and tribal fisheries

for summer steelhead in the Grande Ronde and Imnaha river basins (Carmichael 1989*).* Approximately 1.68 million steelhead smolts were targeted for release in Oregon each year during April and May in the Grande Ronde and Imnaha river basins between 1984 and 1999. In 2000, we reduced releases to approximately 1.2 million smolts in response to the National Marine Fisheries Service's recommendation to help reduce straying of Wallowa hatchery stock steelhead, primarily into the Deschutes River (mid-Columbia tributary). In 2007, we further reduced smolt releases to approximately 1.065 million, partly due to an increased release size from five to four fish per pound (fpp) for Wallowa stock which increased smolt-to-adult survival, and a reduction of Imnaha stock Big Sheep direct stream releases. In 2009, smolt releases were reduced again to approximately 1.015 million, due to reductions in releases of Imnaha stock into Big Sheep Creek. These fish provide hatchery adult returns that contribute to recreational fisheries and may supplement natural spawning populations in northeast Oregon. Consumptive recreational fisheries for summer steelhead re-opened in 1986, in part as a result of increases in hatchery adult returns.

We began creel surveys for summer steelhead during the fall of 1985 in both the Grande Ronde and Imnaha river basins. The goal of these surveys is to provide annual harvest information needed to assess LSRCP goals (Carmichael and Wagner 1983). In general, the number of summer steelhead in the recreational fishery has been restored to historic values, but the fishery is concentrated at different times and places (Flesher et al. 1994). This report summarizes results of creel surveys conducted during the fall of 2007 and the spring of 2008 in the Grande Ronde and Imnaha river basins. In addition, this report contains estimates of total effort, catch, and harvest for all fisheries in the Grande Ronde river basin not reported in the previous annual report for the 2006-07 run year. The Grande Ronde and Imnaha river basins encompass the major steelhead fisheries that occur in Oregon tributaries to the Snake River upstream of Lower Granite Dam.

STUDY AREA

Creel surveys on the Grande Ronde River were conducted on a lower 24 km section from the Oregon-Washington state line (Rkm 62) upstream to Wildcat Creek (Rkm 86, Figure 1). Surveys on the Wallowa River were conducted on a 6 km section from its confluence with the Grande Ronde River at Rondowa (mouth of the Wallowa River) upstream to Howard Creek (Rkm 6) and a 50 km section from Minam State Park (Rkm 13) upstream to the mouth of Trout Creek (Rkm 63) near Enterprise. Anglers who parked their vehicles at Minam State Park to fish just below the park were included in the Wallowa survey. Because vehicle access into Rondowa was limited, anglers parked their vehicles at Palmer Junction, located 5.6 km upstream of Rondowa on the Grande Ronde River, and on Smith Mountain Road at the Forest Capital Partners gate, approximately 16 km by road to Rondowa. Thus, for the Rondowa survey, we interviewed anglers leaving the parking areas at Palmer Junction and at the gate on Smith Mountain Road when they were encountered. The survey on the Imnaha River was conducted on the lower 32 km from its confluence with the Snake River (Rkm 0)

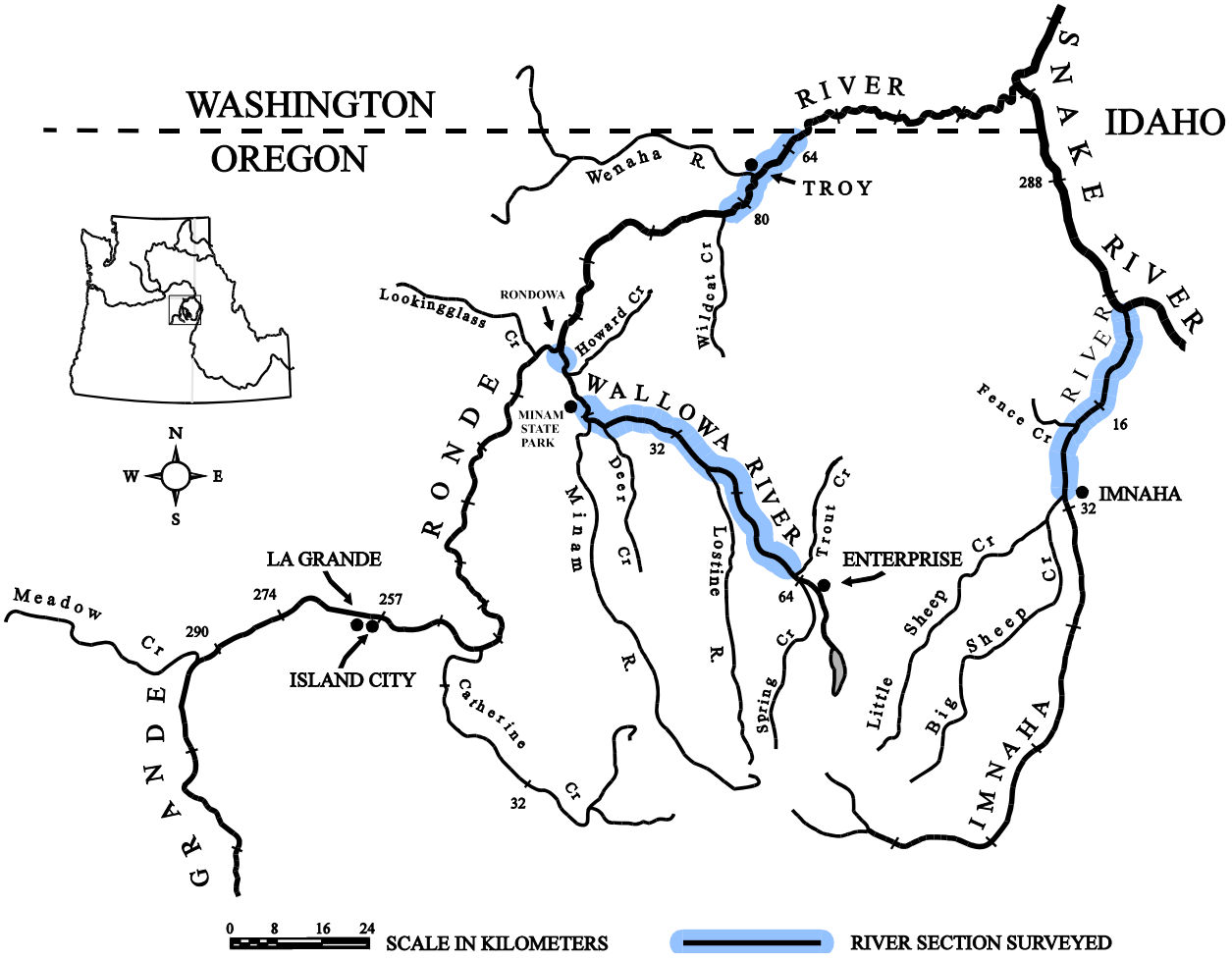

Figure 1. Map of northeastern Oregon showing where summer steelhead creel surveys were conducted in the Grande Ronde and Imnaha river basins during the 2007-08 run year.

upstream to the mouth of Big Sheep Creek (Rkm 32) near the town of Imnaha (Figure 1).

METHODS

For the lower Grande Ronde River survey, we used the methodology described by Carmichael et al. (1988). The survey on the lower Grande Ronde River was conducted from 1 September 2007 through 15 April 2008. Our goal was to sample 50% of the weekends (Saturday and Sunday) and holidays and 30% of the weekdays (Monday through Friday) during each month of each survey. Sample days were chosen randomly in two-day blocks, representing two strata (weekend days and holidays, and weekdays). On each sample day, beginning at a randomly selected start time, the creel surveyor conducted a pressure count by tallying all anglers and vehicles every three hours while driving a vehicle along the entire survey route. Between pressure counts, the surveyor interviewed anglers by recording a description of each angler, what species of fish they were angling for, what type of angling gear they were using, their residence, the number of hours they had fished, and the number and species of fish caught. The surveyor also sampled all harvested fish by recording fork length (mm), gender, fin clips, and any external tags. If the fish was coded-wire-tagged (CWT), as indicated by adipose and either left or right ventral fin-clips (AdLV or AdRV), the surveyor asked permission from the angler to collect the snout, then excised the snout behind the eye and placed it with an identification number in a plastic bag for later processing.

Surveys on the Imnaha River were conducted from 1 February through 15 April 2008. For the Imnaha River survey, we used a check station for the area below Fence Creek (Rkm 23) and a roving survey in the area above Fence Creek. We selected sample days using the same methodology described for the lower Grande Ronde River survey. Our goal was to survey 50% of the weekends and 30% of the weekdays during each month of each survey. For the check station, we used the methodology described by Carmichael et al. (1988). The check station was designed so that anglers leaving the lower river area during a sample day would stop voluntarily and the surveyor would interview each angler and sample all harvested fish. At the end of the second sample day, the surveyor would drive to Cow Creek (Rkm 7) and interview all anglers encountered that fished during the two-day period and did not exit through the check station. For the roving survey, we followed the same procedures as on the lower Grande Ronde River survey except that the surveyor interviewed anglers during pressure counts. For each pressure count, the surveyor closed the check station, interviewed and enumerated all anglers from Fence Creek to the town of Imnaha, and returned. Time spent away from the check station was recorded, and catch and harvest data was expanded to account for the unsampled time.

For the Wallowa River and Rondowa survey areas, one surveyor conducted angler interviews from 1 February to 15 April 2008. We surveyed the Wallowa River area each sample day and surveyed both the Wallowa and Rondowa survey areas every other

sample day. For the Wallowa River survey, the surveyor drove the survey route from Trout Creek downstream to Minam State Park, stopped to interview anglers, then waited at the park for approximately one hour and interviewed returning anglers that had hiked below the park to fish, and then repeated this sequence. On alternate sample days, the surveyor drove the survey route from Minam State Park upstream to Trout Creek, stopping to interview anglers along the way, then drove to the Smith Mountain parking area that anglers use to access Rondowa and interviewed anglers returning from Rondowa for approximately one hour, and then repeated the sequence. Throughout the season, the surveyor would occasionally drive to Palmer Junction (on the Grande Ronde River) to check for anglers accessing Rondowa. All harvested fish observed were sampled. From 1 February to 1 March, we surveyed five days each week (Sunday – Saturday) from 0900-1800 hours. From 2 March to 15 April, we surveyed four days each week from 0800-1900 hours.

For the lower Grande Ronde River creel surveys, we estimated angler effort in hours and days, total catch, harvest, catch rate, percent hatchery fish in the catch, and the number of AdLV+CWT and AdRV+CWT marked fish harvested (see Carmichael et al. 1988). Similar statistics were estimated for the Imnaha River surveys, except the percent of marked fish was substituted for percent of hatchery fish, since unmarked hatchery steelhead were not distinguishable from wild adults. For the Wallowa and Rondowa survey areas, we estimated catch rate and percent hatchery fish in the catch. In addition, we determined age and gender composition and mean fork length of harvested fish in all survey areas. Catch rate was expressed as an index, hours per fish, in which lower values indicate better angling success and higher values indicate poorer angling success.

We estimated total harvest by month during spring fisheries in the Grande Ronde basin for the previous year (2006-07 run year) that do not have a statistical creel survey in place, by using the angler harvest card estimates of harvest and a regression between angler harvest card harvest and creel survey harvest for specific reaches within the Grande Ronde and Imnaha basins for previous years. The regression is updated annually with lower Grande Ronde and Imnaha fishery harvest estimates from angler harvest tag returns and from the statistical surveys that were conducted. However, there is usually a one or two-year delay in obtaining final angler harvest tag estimates of total harvest. To estimate total catch, we multiplied total harvest estimates by the ratio of sampled catch to sampled harvest from creel surveys. To estimate total angler effort in hours, we used total catch divided by the sample catch rate (fish per hour) reported in the previous years' annual report (Flesher et al. 2009).

Figure 8, 9, 10, and 11, and Table 5 in this report also include data from creel surveys conducted on the upper Grande Ronde River from 1989 to 2002 and Catherine Creek in 1992, 1993, and 1997 to 1999, and were originally reported on in Carmichael et al. (1989, 1990), and Flesher et al. (1991, 1992, 1993, 1994, 1995, 1996, 1997, 1999, 2000, 2001, 2004a, and 2004b).

In spring 2008, we recycled hatchery adult returns from the Big Canyon Facility back into the Wallowa River fishery, using methodology described by Flesher et al. (2007). Between 7 March and 11 April, 77 adipose fin-clipped adults trapped at the Big Canyon Facility (located at the mouth of Deer Creek) were transported and released into the Wallowa River 1.6 Rkm below the mouth of Deer Creek. As in past years, fish were uniquely marked using an opercle punch to identify them as recycled. Recaptures at the Big Canyon Facility were enumerated by opercle punch and euthanized. The creel surveyor checked for opercle punches on all harvested fish that were sampled after the recycled group was released.

ACCOMPLISHMENTS AND FINDINGS

On the lower Grande Ronde River from 1 September 2007 to 15 April 2008, we sampled 52.1% of the weekends and holidays (38 days) and 32.3% of the weekdays (50 days) for a total of 88 sample days. On the Wallowa River from 1 February to 15 April 2008, we sampled 95.7% of the weekends and holidays (22 days) and 44.2% of the weekdays (23 days) for a total of 45 sample days. During the same time period at Rondowa, we sampled 60.9% of the weekends and holidays (14 days) and 9.6% of the weekdays (5 days) for a total of 19 sample days. On the Imnaha River from 1 February to 15 April 2008, we sampled 56.5% of the weekends and holidays (13 days) and 32.7% of the weekdays (17 days) for a total of 30 sample days.

We estimate that 3,267 anglers fished for 16,056 hours on the lower Grande Ronde River during the 2007-08 season. They caught and released 567 wild and 287 hatchery steelhead, and harvested 910 hatchery steelhead for an average catch rate index of 9 hours per fish (Figures 2-6, Appendix Table A-1). The percent of steelhead caught that were hatchery origin ranged from 0% in April to 81% in September (Figure 7, Appendix Table B). Seventy-four percent of harvested hatchery steelhead spent one year in freshwater and one year in saltwater (hereafter designated 1:1), 25% spent one year in freshwater and two years in saltwater (designated1:2); and 1% spent one year in freshwater and three years in saltwater (designated 1:3, Table 1). Mean fork length (±95% confidence interval) of harvested hatchery steelhead was 606 (±5) mm for age 1:1, 688 (±14) mm for age 1:2, and 800 mm for age 1:3 (Table 1). Gender composition was 56% male and 44% female (Table 1). Fifty-six percent of the anglers on the lower Grande Ronde River were local Oregon resident anglers, 27% were non-local Oregon resident anglers, 5% were Washington State residents and 12% resided outside the states of Oregon and Washington (Table 2). On the lower Grande Ronde River, anglers harvested an estimated 241 AdLV+CWT and AdRV+CWT marked steelhead from our hatchery releases and an estimated 14 AdLV+CWT marked steelhead from Washington Department of Fish and Wildlife releases on the Grande Ronde River at the Cottonwood Conditioning Pond, Washington (Table 3).

At Rondowa, the catch rate index averaged 7 hours per fish (Figure 4, Appendix Table A-2). The percent of steelhead caught that were hatchery origin ranged from 14% in April to 93% in March (Figure 7, Appendix Table B). Age composition of

harvested hatchery steelhead was 68% 1:1 and 32% 1:2 (Table 1). Mean fork length (±95% confidence interval) of harvested hatchery steelhead was 605 (±13) mm for age 1:1 and 692 (±22) mm for age 1:2 (Table 1). Gender composition was 41% male and 59% female (Table 1). Twenty-eight percent of the anglers at Rondowa were local Oregon resident anglers, 37% were non-local Oregon resident anglers, 9% were Washington State residents and 25% resided outside the states of Oregon and Washington (Table 2). At Rondowa, we observed that angler harvest was 5 AdLV+CWT and AdRV+CWT marked steelhead from our hatchery releases; however, expanded estimates for the entire fishery will not be determined until state angler harvest tag data become available, as reported in Table 3.

On the Wallowa River, the catch rate index averaged 7 hours per fish (Figure 4, Appendix Table A-3). The percent of steelhead caught that were hatchery origin ranged from 84% in April to 92% in both February and March (Figure 7, Appendix Table B). Age composition of harvested hatchery steelhead was 76% 1:1, 24% 1:2, and less than 1% each for age 2:1 and 1:3 (Table 1). Mean fork length (±95% confidence interval) of harvested hatchery steelhead was 606 (±3) mm for age 1:1, 694 (±7) mm for age 1:2, 570 mm for age 2:1, and 827 (±137) mm for age 1:3 (Table 1). Gender composition was 61% male and 39% female (Table 1). Sixty-one percent of the anglers on the Wallowa River were local Oregon residents, 31% were non-local Oregon residents, 3% were Washington State residents and 5% resided outside the states of Oregon and Washington (Table 2). On the Wallowa River, observed angler harvest was 147 AdLV+CWT and AdRV+CWT marked steelhead from our hatchery releases; however, expanded estimates for the entire fishery, as reported on in Table 3, will not be determined until state angler harvest tag data become available.

On the Imnaha River, we estimate that 1,548 anglers fished for 6,074 hours. They caught and released 1,572 unmarked (wild and hatchery) and 338 hatchery steelhead, and harvested 443 hatchery steelhead for an average catch rate index of 3 hours per fish (Figures 2-6, Appendix Tables A-4 and A-5). The percent of steelhead caught that were known hatchery origin ranged from 20% in April in Section 2 (mouth upstream to Fence Creek) to 46% in March in Section 2 (Figure 7, Appendix Table B). Age composition of harvested hatchery steelhead was 73% 1:1, 25% 1:2, 1% 2:1, and 1% 1:3 (Table 1). Mean fork length (±95% confidence interval) of harvested hatchery steelhead was 595 (±6) mm for age 1:1, 664 (±16) mm for age 1:2, 590 (±254) mm for age 2:1, and 650 mm for age 1:3 (Table 1). Gender composition was 46% male and 54% female (Table 1). Eighty-two percent of the anglers on the Imnaha River were local Oregon residents, 13% were non-local Oregon residents, 2% were Washington State residents and 3% resided outside the states of Oregon and Washington (Table 2). On the Imnaha River, anglers harvested an estimated 41 AdLV+CWT marked steelhead from our hatchery releases (Table 3).

Angler effort was similar on the lower Grande Ronde River and higher on the Imnaha River compared to last year and both were higher than the overall average since surveys began during the 1985-86 run year (Figure 8). Harvest on the lower Grande Ronde was lower than last year but higher than the overall average, while harvest on

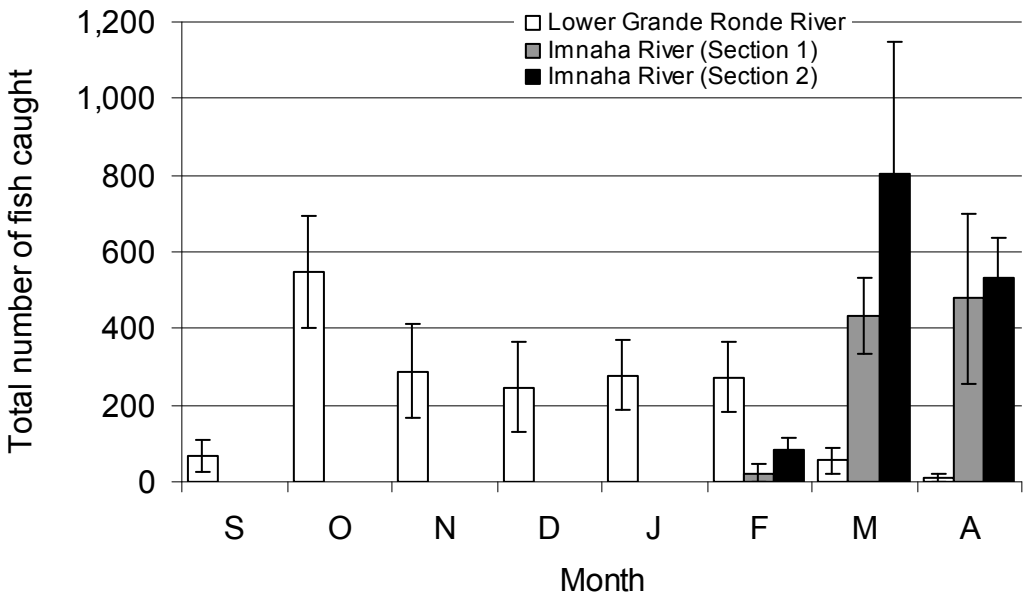

Figure 2. Estimated total catch of summer steelhead (vertical bars show 95% confidence intervals) on the lower Grande Ronde River, and two sections of the Imnaha River during the 2007-08 run year. Surveys were conducted from 1 September 2007 to 15 April 2008 on the lower Grande Ronde River, and from 1 February to 15 April 2008 on the Imnaha River.

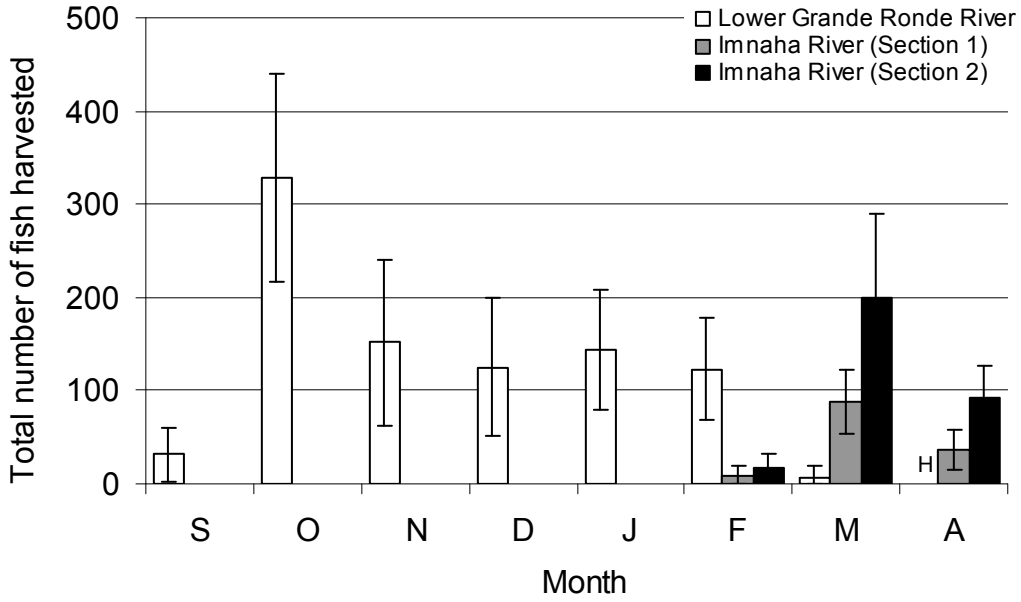

Figure 3. Estimated total harvest of summer steelhead (vertical bars show 95% confidence intervals) on the lower Grande Ronde River, and two sections of the Imnaha River during the 2007-08 run year. "H" indicates no harvest. Surveys were conducted from 1 September 2007 to 15 April 2008 on the lower Grande Ronde River, and from 1 February to 15 April 2008 on the Imnaha River.

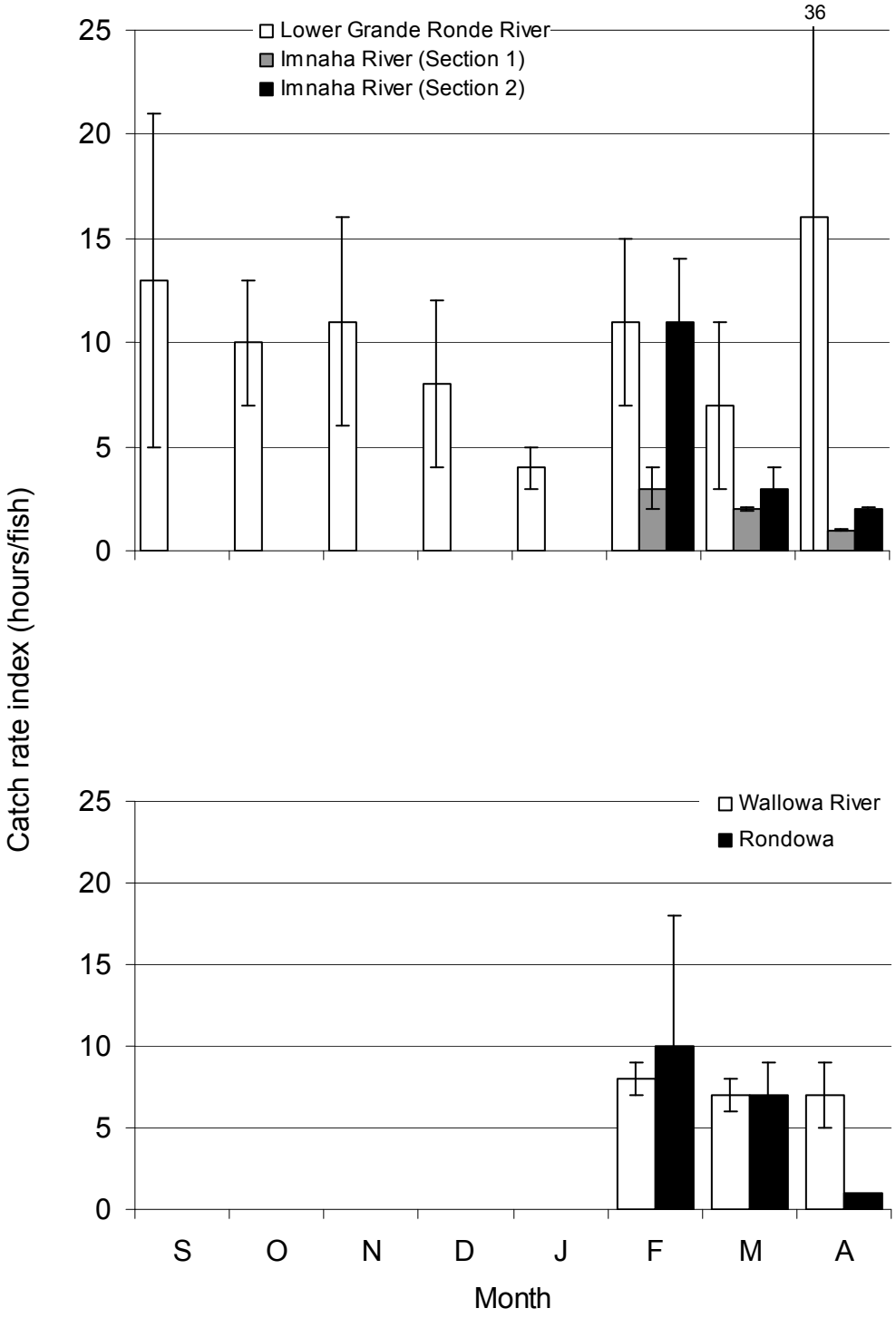

Figure 4. Estimated catch rate index (hours/fish) for summer steelhead (vertical bars show 95% confidence intervals) in the Grande Ronde and Imnaha river basins during the 2007-08 run year. Survey areas and times include the lower Grande Ronde River (1 September 2007 - 15 April 2008), and Rondowa, Wallowa River, and two sections of the Imnaha River (1 February - 15 April 2008). Note: A lower catch rate index implies better angling success.

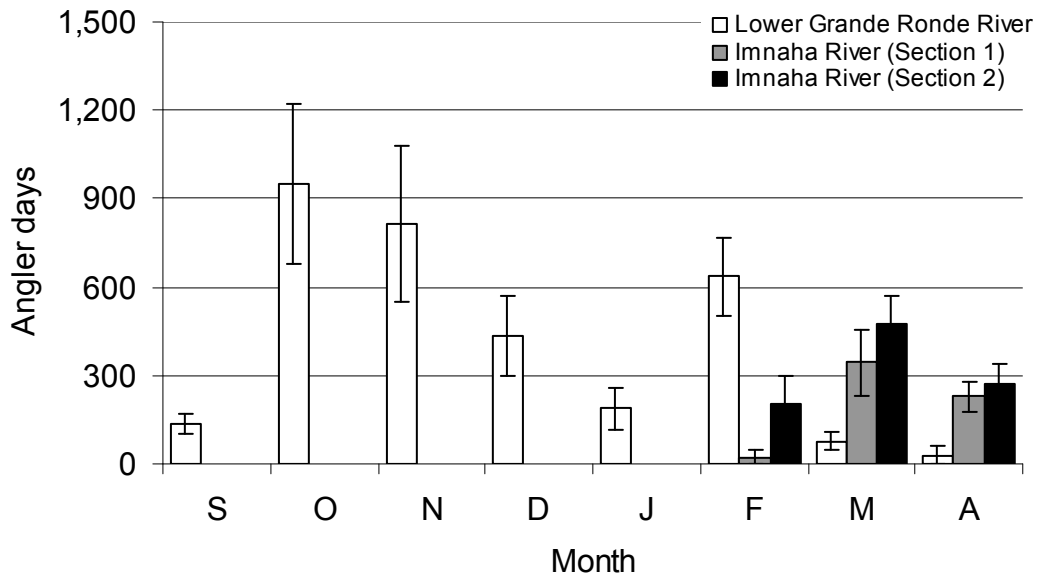

Figure 5. Estimated number of angler days for summer steelhead (vertical bars show 95% confidence intervals) on the lower Grande Ronde River, and two sections of the Imnaha River during the 2007-08 run year. Surveys were conducted from 1 September 2007 to 15 April 2008 on the lower Grande Ronde River, and from 1 February to 15 April 2008 on the Imnaha River.

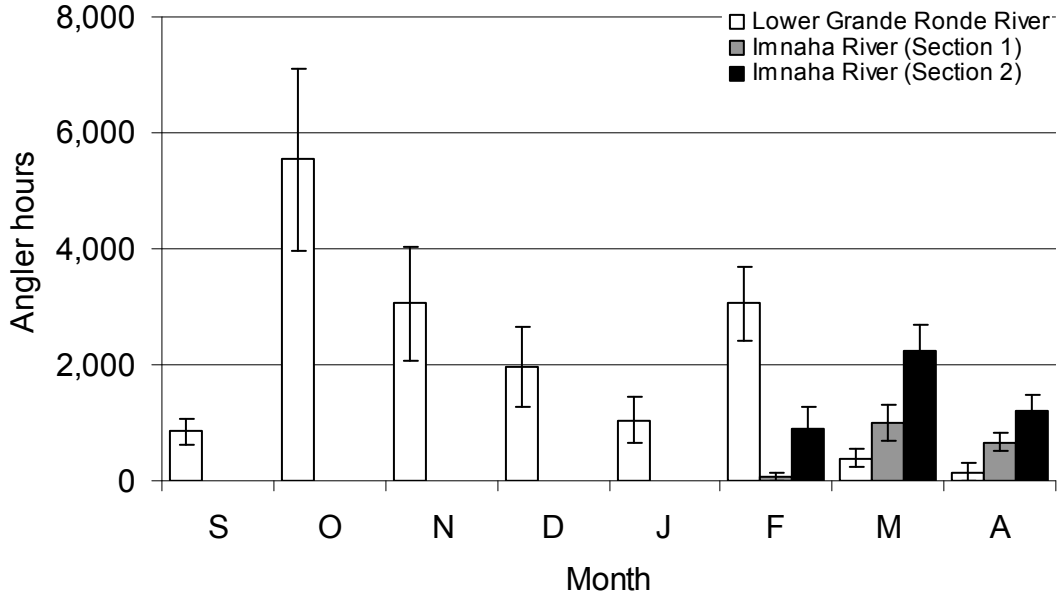

Figure 6. Estimated number of angler hours for summer steelhead (vertical bars show 95% confidence intervals) on the lower Grande Ronde River, and two sections of the Imnaha River during the 2007-08 run year. Surveys were conducted from 1 September 2007 to 15 April 2008 on the lower Grande Ronde River, and from 1 February to 15 April 2008 on the Imnaha River.

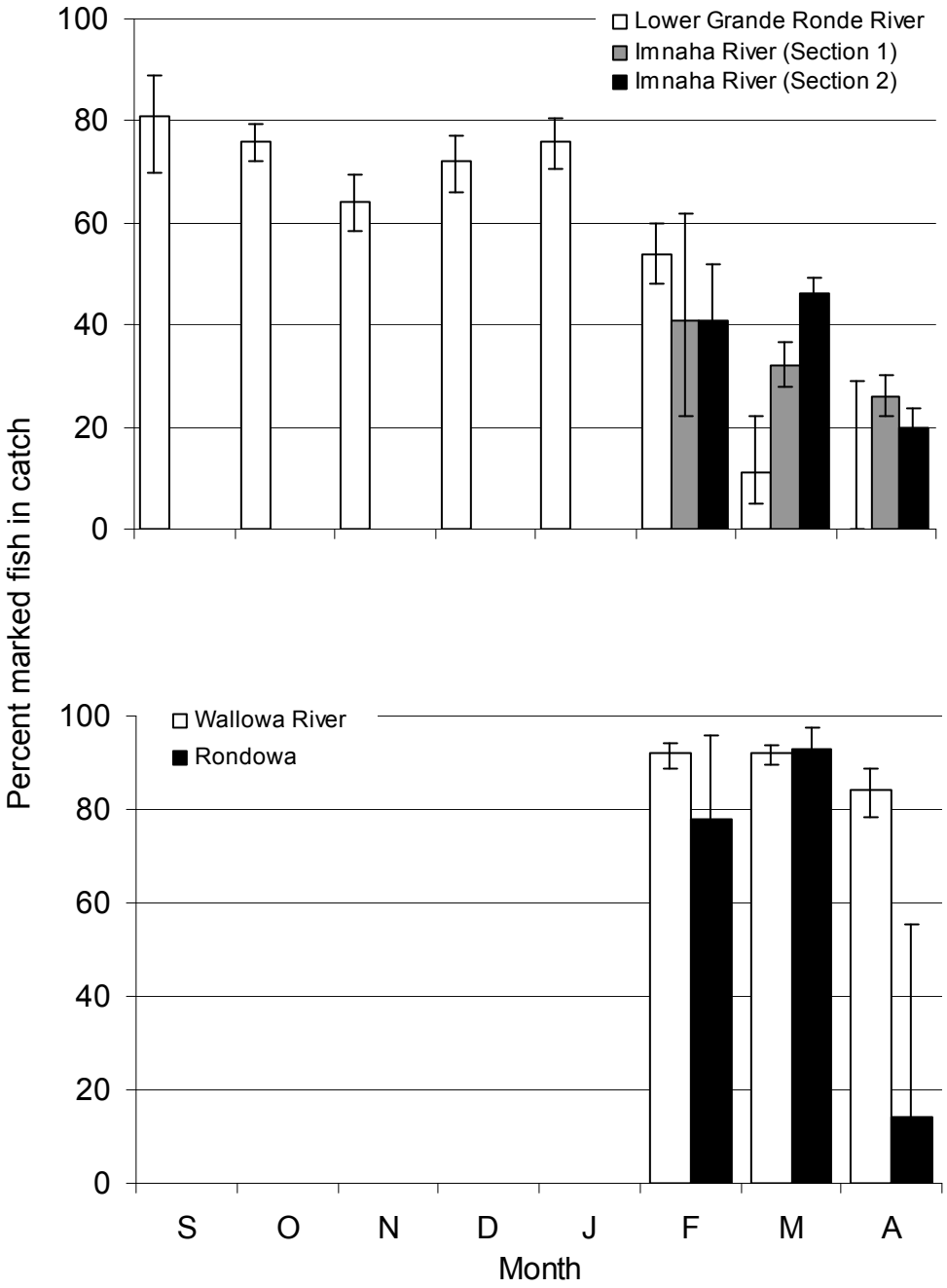

Figure 7. Estimated percent of summer steelhead caught (vertical bars show 95% confidence intervals; using a binomial distribution) in the Grande Ronde and Imnaha river basins during the 2007-08 run year that were marked. In the Grande Ronde basin all unmarked fish were wild, whereas in the Imnaha basin unmarked fish were of both wild and hatchery origin. Survey areas and times include the lower Grande Ronde River (1 September 2007 - 15 April 2008), and Rondowa, Wallowa River, and two sections of the Imnaha River (1 February - 15 April 2008).

Table 1. Percent age composition and mean fork length (± 95% confidence intervals) of hatchery summer steelhead sampled in creel surveys in the Grande Ronde and Imnaha river basins during the 2007-08 run year. Age composition and mean fork length by age are estimated from fork lengths of harvested fish and age-length keys developed from hatchery returns to Wallowa Hatchery in 2008 and Little Sheep Creek Facility (for the Imnaha River survey area) in 2007 and 2008. Age is expressed as years spent in freshwater prior to ocean migration:years spent in the ocean prior to spawning migration. "-" indicates not sampled or undefined.

Creek survey	Age composition (%)					Mean fork length (mm)							
area, gender	N	1:1	1:2	2:1	1:3	N	1:1	N	1:2	N	2:1	N	1:3
Lower GR R.													
Males	112	84	16	0	0	94	613±6	18	708±30	0	-	0	-
Females	87	62	37	0	1	54	594±7	32	677±13	0	-	1	800
Total	199	74	25	0	1	148	606±5	50	688±14	0	-	1	800
Rondowa													
Males	14	86	14	0	0	12	688±9	2	718±413	0	-	0	-
Females	20	55	45	0	0	11	601±12	9	686±23	0	-	0	-
Total	34	68	32	0	0	23	605±13	1	692±22	0	-	0	-
Wallowa R.													
Males	387	84	16	<1	0	306	613±3	60	702±12	1	570	0	-
Females	247	63	36	0	1	147	593±4	83	688±9	0	-	3	827±137
Total	634	76	24	<1	<1	453	606±3	143	694±7	1	570	3	827±137
Imnaha R.													
Males	76	87	13	0	0	56	610±8	8	678±37	0	-	0	-
Females	89	61	36	2	1	46	576±7	27	660±19	2	590±254	1	650
Total	165	73	25	1	1	102	595±6	35	664±16	2	590±254	1	650

Table 2. Residence of summer steelhead anglers interviewed during creel surveys in the Grande Ronde and Imnaha river basins during the 2007-08 run year. Local Oregon resident anglers were from Union and Wallowa counties.

		Percent			
Creel survey area	Number of anglers	Local Oregon resident anglers	Non-local Oregon resident anglers	Washington resident anglers	Other out-of-state anglers[a]
Lower GR River	995	56	27	5	12
Rondowa	75	28	37	9	25
Wallowa River	2,191	61	31	3	5
Imnaha River	641	82	13	2	3

[a] *Out-of-state anglers on the Lower Grande Ronde River includes two anglers from Canada.*

Table 3. Number of AdLV+CWT or AdRV+CWT marked summer steelhead recovered during creel surveys in the Grande Ronde and Imnaha river basins during the 2007-08 run year. Recoveries were expanded for the entire fishery.

Creel survey area	Tag code	Release site	Experimental group[a]	Brood Year	Number recovered	
					Observed	Expanded[b]
Lower Grande Ronde River	07 41 31	Spring Cr.	Prod./April	2005	2	11
	07 41 32	Spring Cr.	Prod./April	2005	3	7
	07 41 33	Spring Cr.	Prod./April	2005	4	20
	07 41 34	Deer Cr.	Prod./April	2005	3	10
	07 41 35	Spring Cr.	Fall Brood/April	2005	5	21
	09-17-05	Spring Cr.	Fall Brood/April	2005	3	21
	09-26-08	Spring Cr.	Fall Brood/April	2005	1	4
	09-26-44	Spring Cr.	Fall Brood/April	2005	7	27
	09-26-45	Spring Cr.	Fall Brood/April	2005	11	42
	09 41 05	Spring Cr.	Prod./April	2004	1	4
	09 41 07	Spring Cr.	Volitional/May	2004	1	3
	09 41 08	Spring Cr.	Fall Brood/April	2004	2	16
	09 41 10	Spring Cr.	Fall Brood/April	2004	4	16
	09 41 11	Spring Cr.	Fall Brood/May	2004	1	8
	09 41 12	Deer Cr.	Prod./April	2004	1	2
	09 43 01	Spring Cr.	Fall Brood/May	2005	7	31
	63 32 90	-	WDFW[c]	2005	2	17
Wallowa River	09 41 04	Spring Cr.	Prod./April	2004	5	ND
	09 41 05	Spring Cr.	Prod./April	2004	2	ND
	09 41 06	Spring Cr.	Prod./April	2004	5	ND
	09 41 07	Spring Cr.	Volitional/May	2004	1	ND
	09 41 08	Spring Cr.	Fall Brood/April	2004	4	ND
	09 41 09	Spring Cr.	Fall Brood/April	2004	4	ND
	09 41 10	Spring Cr.	Fall Brood/April	2004	3	ND
	09 41 12	Deer Cr.	Prod./April	2004	5	ND
	09 41 13	Deer Cr.	Volitional/May	2004	8	ND
	07 41 31	Spring Cr.	Prod./April	2005	8	ND
	07 41 32	Spring Cr.	Prod./April	2005	5	ND
	07 41 33	Spring Cr.	Prod./April	2005	10	ND
	07 41 34	Deer Cr.	Prod./April	2005	25	ND
	07 41 35	Spring Cr.	Fall Brood/April	2005	5	ND
	09 17 05	Spring Cr.	Fall Brood/April	2005	1	ND
	09 26 08	Spring Cr.	Fall Brood/April	2005	2	ND
	09 26 44	Spring Cr.	Fall Brood/April	2005	10	ND
	09 26 45	Spring Cr.	Fall Brood/April	2005	13	ND
	09 43 01	Spring Cr.	Fall Brood/May	2005	9	ND
	09 43 02	Deer Cr.	Volitional/May	2005	14	ND
	09 43 03	Spring Cr.	Volitional/May	2005	8	ND
Rondowa	09 41 06	Spring Cr.	Prod./April	2004	1	ND
	09 41 09	Spring Cr.	Fall Brood/April	2004	1	ND
	09 41 12	Deer Cr.	Prod./April	2004	1	ND
	07 41 33	Spring Cr.	Prod./April	2005	1	ND
	09 26 44	Spring Cr.	Fall Brood/April	2005	1	ND

Table 3. Continued.

Creel survey area	Tag code	Release site	Experimental group[a]	Brood Year	Number recovered Observed	Expanded[b]
Imnaha River	07 41 30	L. Sheep Cr.	Prod./April	2005	10	28
	09 39 12	L. Sheep Cr.	Prod./April	2003	1	2
	09 40 20	B. Sheep Cr.	Direct St./April	2004	4	11
	07 41 30	L. Sheep Cr.	Prod./April	2005	10	28
	09 39 12	L. Sheep Cr.	Prod./April	2003	1	2
	09 40 20	B. Sheep Cr.	Direct St./April	2004	4	11

[a] *Prod. indicates production releases that are forced-released over a 24-hour period. Direct St. indicates direct stream releases. The volitional releases in May (usually over a one-week period) are a current management strategy designed to help remove steelhead smolts that may residualize.*

[b] *ND indicates expansions not determined until statewide annual harvest card data become available.*

[c] *Steelhead with tag code 63 32 90 were Wallowa stock released by Washington Department of Fish and Wildlife (WDFW) in the lower Grande Ronde River at the Cottonwood Conditioning Pond, Washington, from 4-24 April 2006.*

the Imnaha River was the highest observed since surveys began (Figure 9). Total catch (harvested and released) was lower than the previous year on the Lower Grande Ronde and lower than the overall average, while catch on the Imnaha was the highest estimated since surveys began (Table 4). Catch and release of wild steelhead on the lower Grande Ronde was lower but the percent of wild in the total catch was similar to the previous year. On the Imnaha, the number of unmarked hatchery and wild fish was the highest estimated since surveys began while the percent of unmarked fish in the total catch was higher than the previous year. Catch rates were similar to last year on the lower Grande Ronde and Wallowa rivers, and at Rondowa, and all were higher than the average catch rates of 10 to 13 hours per fish, however the Imnaha had one of the highest estimated catch rates since surveys began in 1986 (Table 5). Compared to the previous year, the percent of local resident anglers participating in summer steelhead fisheries decreased on the Lower Grande Ronde River and at Rondowa (mouth of the Wallowa River), was similar on the Wallowa River, and increased on the Imnaha River (Table 2). Similar to last year, the Imnaha fishery had the highest percent of local resident anglers (82%), and the fishery at Rondowa had the highest percentage of both non-local Oregon resident anglers (37%) and of out-of-state anglers (25%). For the Grande Ronde and Imnaha basin fisheries as a whole, the percent of local resident anglers has decreased while the percent of non-local and out-of-state anglers has increased (Figure 10). This trend is due to an increase in the number of non-local and out-of-state anglers.

We found a statistically significant linear relationship (P<0.001) between angler harvest tag harvest estimates and creel harvest estimates for summer steelhead fisheries in the Grande Ronde and Imnaha river basins (Figure 11). Total harvest estimates for spring steelhead fisheries in the previous run year (2006-07) were 10 fish in the upper Grande Ronde River, 881 fish at Rondowa, 720 fish in the Wallowa River, 30 fish in the Wenaha River, and 197 fish in the middle Grande Ronde River, for a total harvest estimate of 1,838 fish in the Grande Ronde basin, excluding the lower Grande Ronde River (Figure 9, Appendix Table C-1). We estimated 102 coded-wire-tagged fish were harvested at Rondowa, and 109 coded-wire-tagged fish were harvested in the

Wallowa River in the 2006-07 run year. Total catch estimates for spring steelhead fisheries in the 2006-07 run year were 19 fish in the upper Grande Ronde River, 1,691 fish at Rondowa, 1,406 fish in the Wallowa River, 77 fish in the Wenaha River, and 376 fish in the middle Grande Ronde River, for a total catch estimate of 3,569 fish in the Grande Ronde basin, excluding the lower Grande Ronde River (Appendix Table C-2). Angler effort for the 2006-07 run year was estimated to be 137 hours in the upper Grande Ronde River, 10,348 hours at Rondowa, 9,774 hours in the Wallowa River, 832 hours in the Wenaha River, and 3,155 hours in the middle Grande Ronde River, for a total effort estimate of 24,246 hours in the Grande Ronde basin, excluding the lower Grande Ronde River (Appendix Table C-3).

We recycled 77 summer steelhead to the Wallowa River fishery in 2008. Thirty-nine recycled fish were recaptured at the Big Canyon Facility and an estimated 8 recycled fish were harvested in the fishery for a total estimated recovery of 47 recycled fish (Appendix Table D).

MANAGEMENT IMPLICATIONS AND RECOMMENDATIONS

Angler effort was similar on the lower Grande Ronde River and higher on the Imnaha River compared to last year and both were higher than the overall average since surveys began in 1985. Harvest and total catch were lower than last year on the lower Grande Ronde River but were both estimated to be the highest since surveys began on the Imnaha River. Catch and release of wild steelhead on the lower Grande Ronde was lower than last year but the percent of wild fish in the total catch was similar. In the Imnaha River fishery it is unknown whether a trend exists for wild steelhead caught and released because of returning unmarked hatchery fish. Catch rates were similar on the lower Grande Ronde and Wallowa rivers and at Rondowa (mouth of the Wallowa) compared to last year, and all were higher than the overall average of 10-13 hours per fish. However, the Imnaha River had one of the highest estimated catch rates since surveys began. Hatchery fish dominated the catch during the fall and winter months on the lower Grande Ronde River and in the spring months on the Wallowa River and at Rondowa. On the Imnaha River unmarked hatchery fish, which are indistinguishable from natural fish, and marked hatchery fish contributed substantially to the fishery from February through mid-April. These fishery statistics continue to illustrate the importance of current hatchery programs to the success of recreational summer steelhead fisheries in both the Grande Ronde and Imnaha river basins. Statistics for the Wallowa and Rondowa fisheries for the 2007-08 run year will be reported in the 2008-09 annual report.

Recycling adult steelhead returning to the Big Canyon Facility back into the Wallowa River for the recreational fishery in 2008 provided additional harvest and sport opportunities for anglers, and reduced the number of surplus adults at the facility. We estimate that 61% of the fish were accounted for either by returning to the Big Canyon Facility or in the harvest. Although only 10% were estimated to be harvested in this year's fishery, the higher harvest rates reported in prior years provides the rationale for

our recommendation to continue recycling of adipose fin-clipped steelhead back into the Wallowa River.

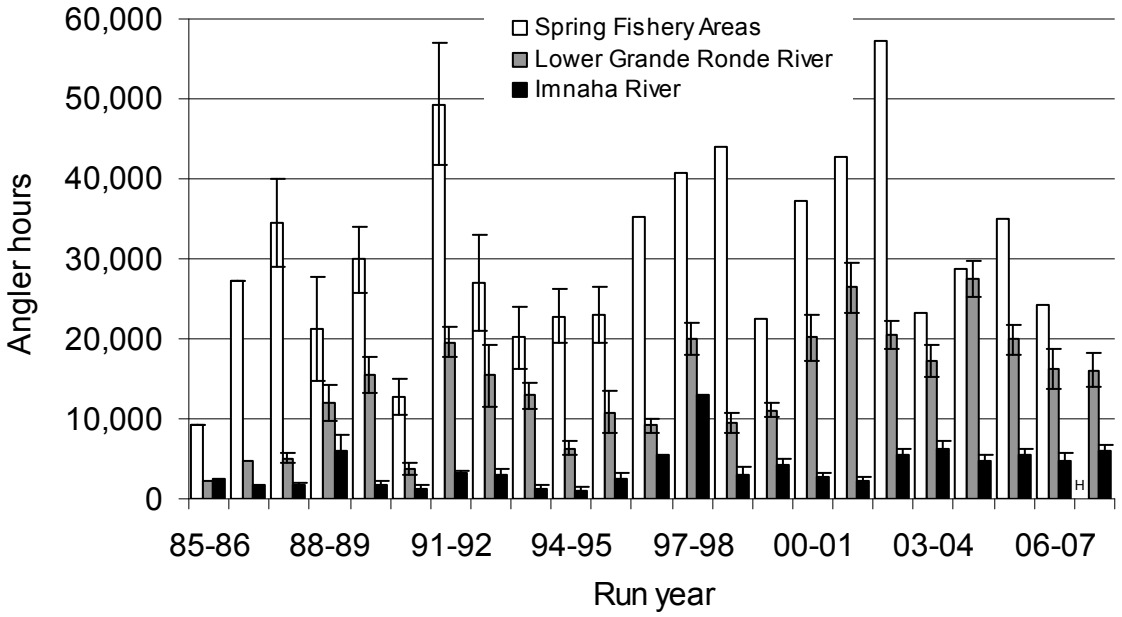

Figure 8. Angler effort for summer steelhead (vertical bars show 95% confidence intervals) in spring fishery areas (upper Grande Ronde River, Wallowa River, Catherine Creek, and Rondowa), the lower Grande Ronde River, and the Imnaha River for the 1985-86 to 2007-08 run years. "H" indicates this value must be estimated from harvest tag data, which was not available when this report was submitted. Confidence intervals are not available for the 85-86 and 86-87 run years, the Imnaha fishery for the 96-97 and 97-98 run years, and for spring fishery areas beginning with the 96-97 run year.

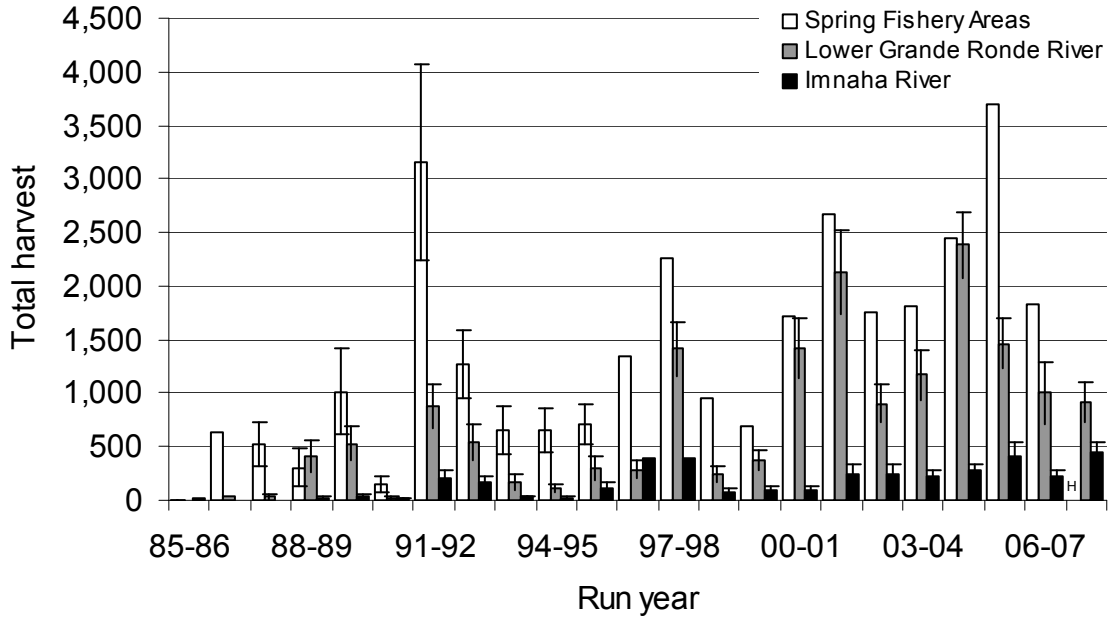

Figure 9. Number of hatchery summer steelhead harvested (vertical bars show 95% confidence intervals) by recreational anglers in spring fishery areas (upper Grande Ronde River, Wallowa River, Catherine Creek, and Rondowa), the lower Grande Ronde River, and the Imnaha River for the 1985-86 to 2007-08 run years. H indicates this value must be estimated using harvest tag data, which was not yet available. Confidence intervals are not available for the 85-86 and 86-87 run years, the Imnaha fishery for the 96-97 and 97-98 run years, and for spring fishery areas beginning with the 96-97 run year.

Table 4. Estimated total catch (harvested and released) of hatchery and wild summer steelhead from statistical angler surveys conducted on the lower Grande Ronde River from 1 September to 15 April, and Imnaha River from 1 February to 15 April for the 1985-86 to 2007-08 run years. Fishing regulations were not consistent among years and river sections, which probably affected the number of harvested hatchery fish. "-" indicates a statistical angler survey was not conducted.

	Lower Grande Ronde River				Imnaha River			
		Released		Total		Released		Total
Run year	Harvest	Hatchery	Natural[a]	catch	Harvest	Hatchery	Natural[a]	Catch
85-86[b]	0	0	289	289	18	0	153	171
86-87[b]	45	0	524	569	0	8	192	200
87-88[b]	31	9	455	495	4	0	65	69
88-89[b]	413	87	385	885	19	4	308	331
89-90[b]	530	60	512	1,102	37	9	43	89
90-91[b]	18	87	99	204	15	35	50	100
91-92[b]	879	494	410	1,783	212	180	321	713
92-93[b]	544	567	573	1,684	171	65	130	366
93-94[b]	168	84	483	735	29	0	72	101
94-95[b]	107	45	150	302	24	0	39	63
95-96[b]	300	263	387	950	112	67	210	389
96-97	286	179	193	658	-	-	-	-
97-98	1,415	908	432	2,755	-	-	-	-
98-99	244	119	213	576	67	39	44	150
99-00	380	120	474	974	98	50	190	338
00-01	1,417	619	1,240	3,276	97	86	309	492
01-02	2,132	1,059	1,968	5,159	242	210	273	725
02-03	898	330	1,181	2,409	239	134	552	925
03-04	1,172	756	1,052	2,980	228	120	921	1,269
04-05	2,381	1,468	2,627	6,476	278	154	1,050	1,482
05-06	1,462	1,008	1,692	4,162	412	330	1,120	1,862
06-07	999	641	814	2,454	225	70	465	760
07-08	910	287	567	1,764	443	338	1,572	2,353
Average	727	400	727	1,854	141	90	385	617

[a] *Includes unmarked hatchery fish for run years 85-86 to 88-89 on the lower Grande Ronde River, and run years beginning with 02-03 on the Imnaha River.*

[b] *Angler surveys were conducted only during selected months (in parentheses) on the lower Grande Ronde River during run years 85-86 (Oct-Nov), 86-87 and 87-88 (Sept-Dec), 88-89 and 92-93 (Sept-Dec, 15Feb-15Apr), 89-90 and 93-94 (Sept-Dec, Feb-15Apr), 90-91 (Sept-Dec, Mar-15Apr), 95-96 (Sept-Jan, 16Feb-15Apr), and on the Imnaha River during run years 85-86 and 86-87 (Oct-Nov, Mar), 87-88 and 89-90 through 94-95 (Mar-15Apr), 88-89 (Mar-30Apr), and 95-96 (Sept-15Nov, Mar-15Apr).*

Table 5. Catch rate index (hours/fish ±95% confidence intervals) in summer steelhead creel survey areas in the Grande Ronde and Imnaha river basins for the 1985-86 to 2007-08 run years. Note that a lower catch rate index implies greater angling success. "-" indicates not sampled or undefined.

Run year	Catch rate index (hours/fish)					
	Lower GR River	Upper GR River	Catherine Creek	Rondowa	Wallowa River	Imnaha River
85-86	8±7	-	-	-	7±7	15±7
86-87	9±3	-	-	-	11±3	9±8
87-88	10±4	-	-	11±9	16±3	24±9
88-89	14±4	40±55	-	-	43±21	18±11
89-90	14±4	14±8	-	34±27	17±5	20±8
90-91	19±8	24±11	-	-	6±2	13±6
91-92	11±3	10±3	3±3	6±1	10±2	4±1
92-93	9±2	14±4	49±49	-	11±2	8±1
93-94	18±5	31±17	-	12±4	17±3	13±3
94-95	21±6	25±13	-	15±5	17±3	17±8
95-96	11±2	15±4	-	-	21±4	7±2
96-97	14±4	18±9	33±69	-	13±3	6±2
97-98	7±1	13±9	7±10	11±6	10±1	18±9
98-99	17±4	19±9	14±20	-	18±4	20±7
99-00	11±2	25±19	-	8±7	17±4	12±3
00-01	6±1	18±17	-	6±4	11±2	6±1
01-02	5±1	11±17	-	7±4	7±1	3±1
02-03	8±1	-	-	8±6	12±2	6±2
03-04	6±1	-	-	3±2	7±1	5±1
04-05	4±0	-	-	5±1	5±1	4±1
05-06	5±1	-	-	2±1	7±1	3±1
06-07	8±1	-	-	6±2	7±1	6±1
07-08	9±1	-	-	7±2	7±1	3±0
Average	11±2	20±5	21±24	9±4	13±3	10±3

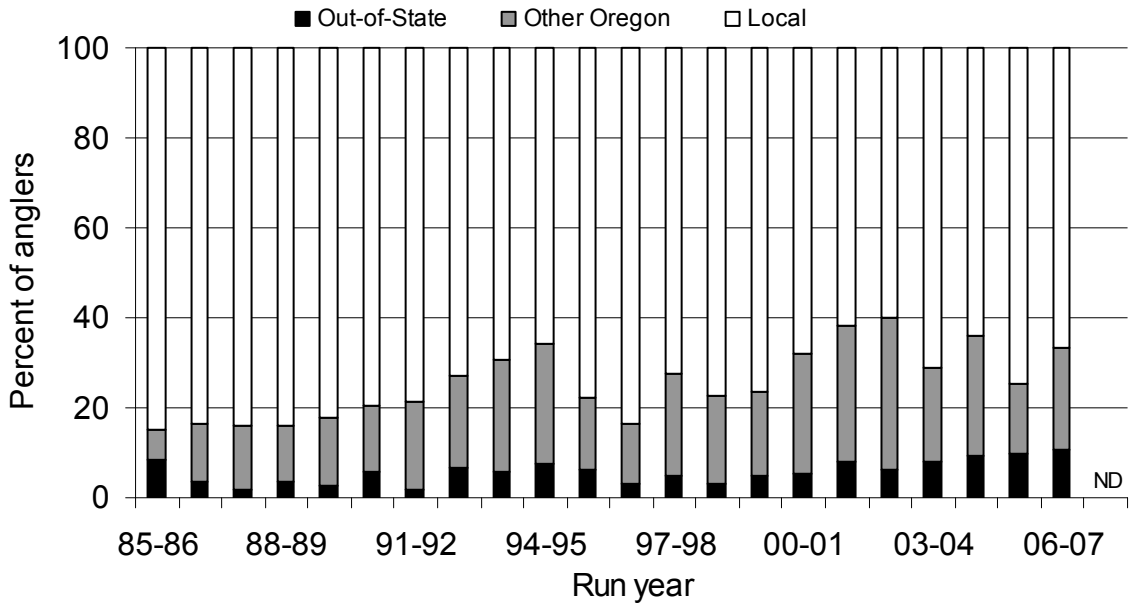

Figure 10. Percent of local resident anglers (Union or Wallowa county residents), non-local Oregon resident anglers, and out-of-state anglers that fished in summer steelhead fisheries in the Grande Ronde and Imnaha river basins for the 1985-86 to 2006-07 run years. ND indicates not determined until statewide annual harvest card data become available.

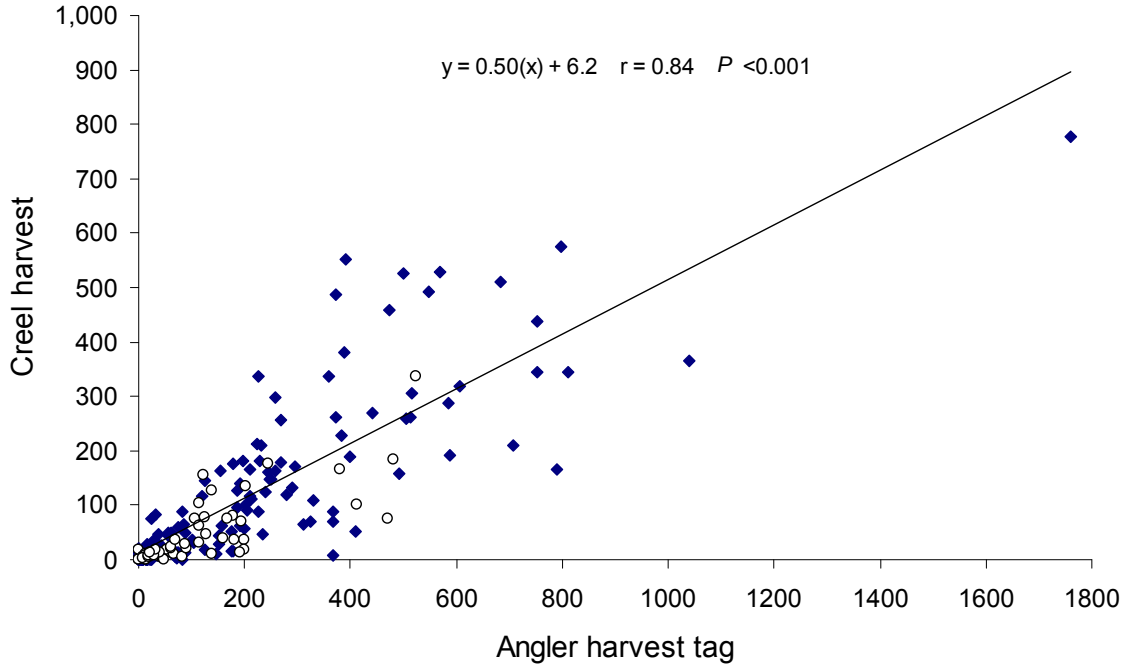

Figure 11. Relation between angler harvest tag (punch card) and creel survey harvest for summer steelhead fisheries in the Grande Ronde (♦) and Imnaha (○) river basins for years when harvest estimates for specific reaches were available (1993-1996 for the upper Grande Ronde and Wallowa, 1994-1995 for Rondowa, 1992-1993 for Catherine Creek, 1993-spring 2007 for the lower Grande Ronde, and 1986-1996, 1999-2007 for the Imnaha fishery areas).

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APPENDIX A

Fishery Statistics for the 2007-08 run year

Appendix Table A-1. Fishery statistics for summer steelhead on the lower Grande Ronde River during the 2007-08 run year. Statistics include mean estimates ±95% confidence intervals. Only adipose fin-clipped fish were harvested. "-" indicates not sampled or undefined. “h” indicates hour.

Month,	Sample size		Total	Total	Total	Catch rate		Angler
day type	Days	Anglers	Hours	Catch	harvest	fish/h	h/fish	days
September:								
Weekday	6	19	336±157	24±24	12±16	0.071±0.071	14±14	47±22
Weekend	6	40	520±159	43±36	20±24	0.084±0.070	11±9	89±27
Total	12	59	856±223	67±43	32±29	0.079±0.051	13±8	136±35
October:								
Weekday	7	127	3,723±1567	389±134	219±104	0.105±0.036	10±3	626±263
Weekend	4	137	1,812±192	158±58	109±43	0.087±0.032	11±4	324±34
Total	11	264	5,535±1579	547±146	328±112	0.099±0.026	10±3	950±271
November:								
Weekday	7	80	1,696±912	134±45	56±51	0.079±0.027	13±4	512±275
Weekend	5	129	1,356±377	155±112	96±73	0.114±0.083	9±7	302±84
Total	12	209	3,052±987	289±121	152±89	0.095±0.040	11±5	814±263
December:								
Weekday	6	67	1,130±655	147±88	57±49	0.130±0.077	8±5	283±164
Weekend	6	95	839±245	99±78	68±55	0.118±0.093	8±6	154±45
Total	12	162	1,969±699	246±117	125±74	0.125±0.060	8±4	437±155
January:								
Weekday	7	34	558±285	162±65	84±44	0.290±0.117	3±1	101±52
Weekend	5	33	493±266	115±63	60±47	0.234±0.127	4±2	86±46
Total	12	67	1,051±390	277±91	144±65	0.264±0.086	4±1	187±69
February:								
Weekday	6	72	1,696±595	118±73	43±45	0.070±0.043	14±9	404±142
Weekend	5	123	1,360±225	155±53	80±33	0.114±0.039	9±3	232±38
Total	11	195	3,056±636	273±90	123±55	0.089±0.029	11±4	636±132
March:								
Weekday	7	17	243±142	29±26	0	0.118±0.105	8±7	50±29
Weekend	5	14	144±51	26±20	6±13	0.181±0.136	6±5	27±10
Total	12	31	387±151	55±32	6±13	0.141±0.083	7±4	77±30
April:								
Weekday	4	6	142±149	10±12	0	0.068±0.082	15±8	29±30
Weekend	2	2	8	0	-	-	-	1
Total	6	8	150±149	10±12	0	0.064±0.078	16±20	30±30
Grand total	88	995	16,056±2146	1,764±263	910±185	0.110±0.016	9±1	3,267±437

Appendix Table A-2. Catch rate (±95% confidence intervals) for summer steelhead at Rondowa during the 2007-08 run year. Only adipose fin-clipped fish were harvested. "-" indicates not sampled or undefined. “h” indicates hour.

Month, day type	Sample size		Catch rate	
	Days	Anglers	fish/h	(h/fish)
February:				
Weekday	0	0	-	-
Weekend	2	12	0.100±0.082	10±8
Total	2	12	0.100±0.082	10±8
March:				
Weekday	3	0	-	-
Weekend	10	62	0.136±0.040	7±2
Total	13	62	0.136±0.040	7±2
April:				
Weekday	2	0	-	-
Weekend	2	1	1.077	1
Total	4	1	1.077	1
Grand total	19	75	0.142±0.042	7±2

Appendix Table A-3. Catch rate (±95% confidence intervals) for summer steelhead on the Wallowa River during the 2007-08 run year. Only adipose fin-clipped fish were harvested. “h” indicates hour.

Month, day type	Sample size		Catch rate	
	Days	Anglers	fish/h	(h/fish)
February:				
Weekday	10	340	0.178±0.047	6±2
Weekend	8	464	0.087±0.018	12±2
Total	18	804	0.124±0.022	8±1
March:				
Weekday	7	355	0.193±0.036	5±1
Weekend	10	652	0.129±0.022	8±1
Total	17	1,007	0.151±0.019	7±1
April:				
Weekday	6	173	0.154±0.049	6±2
Weekend	4	208	0.120±0.034	8±2
Total	10	381	0.135±0.028	7±2
Grand total	45	2,192	0.138±0.013	7±1

Appendix Table A-4. Fishery statistics for summer steelhead in Section 1 (Fence Creek to town of Imnaha) of the Imnaha River during the 2007-08 run year. Statistics include mean estimates ±95% confidence intervals. Only adipose fin-clipped fish were harvested. "-" indicates not sampled or undefined. "h" indicates hour.

Month,	Sample size		Total	Total	Total	Catch rate		Angler
day type	Days	Anglers	Hours	catch	harvest	fish/h	h/fish	days
February:								
Weekday	6	6	46±62	22±25	9±10	0.463±0.152	2±1	17±23
Weekend	6	7	19±11	0	-	-	-	6±3
Total	12	13	65±63	22±25	9±10	0.328±0.108	3±1	23±22
March:								
Weekday	7	72	517±304	265±72	43±24	0.513±0.114	2±0	207±122
Weekend	5	78	486±110	169±67	45±26	0.347±0.097	3±1	137±31
Total	12	150	1,003±323	434±98	88±35	0.433±0.075	2±0	344±111
April:								
Weekday	4	42	369±46	257±175	24±21	0.697±0.378	1±1	121±15
Weekend	2	36	295±141	221±134	13±9	0.749±0.322	1±0	109±52
Total	6	78	664±148	478±221	37±22	0.720±0.254	1±0	230±51
Grand total	30	241	1,732±361	934±243	134±43	0.539±0.107	2±0	597±124

Appendix Table A-5. Fishery statistics for summer steelhead in Section 2 (mouth to Fence Creek) of the Imnaha River during the 2007-08 run year. Statistics include mean estimates ±95% confidence intervals. Only adipose fin-clipped fish were harvested. "h" indicates hour.

Month,	Sample size		Total	Total	Total	Catch rate		Angler
day type	Days	Anglers	Hours	catch	harvest	fish/h	h/fish	days
February:								
Weekday	6	36	542±387	38±21	10±14	0.071±0.033	14±7	119±85
Weekend	6	65	346±84	43±28	7±6	0.123±0.040	8±3	87±21
Total	12	101	888±396	81±35	17±16	0.092±0.025	11±3	206±92
March:								
Weekday	7	85	1,334±399	594±324	126±77	0.445±0.198	2±1	255±76
Weekend	5	102	910±211	210±123	74±45	0.231±0.095	4±2	217±50
Total	12	187	2,244±452	804±346	200±89	0.358±0.124	3±1	472±95
April:								
Weekday	4	61	720±222	344±96	66±30	0.478±0.106	2±0	171±53
Weekend	2	51	490±175	190±36	26±15	0.388±0.052	3±0	102±36
Total	6	112	1,210±283	534±102	92±34	0.441±0.067	2±0	273±64
Grand total	30	400	4,342±664	1,419±363	309±97	0.327±0.067	3±1	951±145

APPENDIX B

Percent of Summer Steelhead That Were Marked Hatchery Fish and Caught in 2007-08 Run Year

Appendix Table B. Percent of marked hatchery summer steelhead caught during each survey month in the Grande Ronde and Imnaha River basins during the 2007-08 run year. For the Imnaha River, percentages include catch of marked hatchery fish only. In parentheses are total catch for the Lower Grande Ronde and Imnaha rivers and sampled catch for the Upper Grande Ronde and Wallowa rivers and Rondowa. On the Imnaha River, Section 1 is from Fence Creek upstream to the town of Imnaha, and Section 2 is from the mouth upstream to Fence Creek. "-" indicates not sampled or undefined.

Creel survey area	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Lower GR River	81(67)	76(547)	64(289)	72(246)	76(277)	54(273)	11(55)	0(10)
Rondowa	-	-	-	-	-	78(9)	93(58)	14(7)
Wallowa River	-	-	-	-	-	92(393)	92(594)	84(192)
Imnaha River (Section 1)	-	-	-	-	-	41(22)	32(434)	26(478)
Imnaha River (Section 2)	-	-	-	-	-	41(81)	46(804)	20(534)

APPENDIX C

Fishery Statistics for Spring Fisheries for the 2006-07 Run Year

Appendix Table C-1. Estimated harvest of summer steelhead, and observed and expanded harvest of AdLV+CWT marked steelhead in spring fisheries in the Grande Ronde basin for the 2006-07 run year. Total harvest = 0.502 (harvest card) + 6.171. Sample rate expansion = total harvest/sampled fish. A sample rate expansion of 25 or greater was considered unreliable, therefore expanded equals observed. Harvest estimates made only for months when steelhead angling season was open (Sept - April) and angler harvest card data was greater than zero. Does not include the lower Grande Ronde (location code 231) fishery. "-" indicates not sampled or undefined. No harvest on Catherine Creek (location code 121).

Fishery, location	Fishery statistics and number of tags recovered by month									Expanded
code, statistics, tag code	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total	tags
Upper Grande Ronde (233)										
Angler harvest cards	0	0	7	0	0	0	0	0		
Total harvest	-	-	10	-	-	-	-	-	10	
Rondowa (234)										
Angler harvest cards	0	4	22	22	49	330	990	253		
Sampled fish	0	0	0	0	0	18	55	4		
Total harvest	-	8	17	17	31	172	503	133	881	
Sample rate expansion	-	-	-	-	-	9.6	9.1	33.3		
09 39 15						0	1	0	1	9
09 41 04						0	1	0	1	9
09 41 05						1	1	0	2	19
09 41 06						0	1	0	1	9
09 41 07						0	1	0	1	9
09 41 08						1	0	0	1	10
09 41 09						0	1	0	1	9
09 41 12						1	2	0	3	28
Wallowa (235)										
Angler harvest cards	0	0	11	4	8	155	949	232		
Sampled fish	0	0	0	0	0	61	171	91		
Total harvest	-	-	12	8	10	84	483	123	720	
Sample rate expansion	-	-	-	-	-	1.4	2.8	1.4		
09 39 14						0	2	0	2	6
09 39 15						1	5	1	7	16
09 39 16						0	1	1	2	4
09 39 17						0	1	3	4	7
09 41 04						1	0	0	1	1
09 41 05						3	0	0	3	4
09 41 06						0	4	0	4	11
09 41 07						0	0	1	1	1
09 41 08						3	1	0	4	7
09 41 09						4	1	0	5	9
09 41 10						5	1	0	6	10
09 41 11						1	0	0	1	1
09 41 12						0	6	2	8	20
09 41 13						0	3	3	6	12
Wenaha (184)										
Angler harvest cards	4	15	0	4	0	0	0	0		
Total harvest	8	14	-	8	-	-	-	-	30	
Middle Grande Ronde (232)										
Angler harvest cards	0	7	30	15	16	106	122	12		
Total harvest	-	10	21	14	14	59	67	12	197	
Total Grande Ronde harvest (excluding lower Grande Ronde)									1,838	

Appendix Table C-2. Estimated catch of summer steelhead in spring fisheries in the Grande Ronde basin for the 2006-07 run year. Total catch = (sampled catch/sampled harvest) x total harvest. For months with little or no sampling, the average proportion was used. For areas with little or no sampling, data from the survey in closest proximity was used. Does not include the lower Grande Ronde fishery. "-" indicates not sampled or undefined.

	Fishery statistics by month								
Fishery[a], statistics	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
Upper Grande Ronde									
Sampled harvest	-	-	-	-	-	-	-	-	-
Sampled catch	-	-	-	-	-	-	-	-	-
Total harvest	-	-	10	-	-	-	-	-	10
Total catch	-	-	19	-	-	-	-	-	19
Catherine Creek									
Sampled harvest	-	-	-	-	-	-	-	-	-
Sampled catch	-	-	-	-	-	-	-	-	-
Total harvest	-	-	-	-	-	-	-	-	0
Total catch	-	-	-	-	-	-	-	-	0
Rondowa									
Sampled harvest	-	-	-	-	-	18	55	4	77
Sampled catch	-	-	-	-	-	51	84	9	144
Total harvest	-	8	17	17	31	172	503	133	881
Total catch	-	15	32	32	58	487	768	299	1,691
Wallowa									
Sampled harvest	-	-	-	-	-	61	171	91	323
Sampled catch	-	-	-	-	-	110	348	159	617
Total harvest	-	-	12	8	10	84	483	123	720
Total catch	-	-	23	15	19	151	983	215	1,406
Wenaha									
Sampled harvest	-	-	-	-	-	-	-	-	-
Sampled catch	-	-	-	-	-	-	-	-	-
Total harvest	8	14	-	8	-	-	-	-	30
Total catch	16	43	-	18	-	-	-	-	77
Middle Grande Ronde									
Sampled harvest	-	-	-	-	-	-	-	-	-
Sampled catch	-	-	-	-	-	-	-	-	-
Total harvest	-	10	21	14	14	59	67	12	197
Total catch	-	19	40	27	27	106	136	21	376
Total Grande Ronde catch (excluding lower Grande Ronde)									3,569

[a] *Wallowa data were used for the upper Grande Ronde, middle Grande Ronde, and Catherine Creek; lower Grande Ronde data, in Flesher et al. 2009, were used for the Wenaha.*

Appendix Table C-3. Estimated angler effort (hours) for summer steelhead in spring fisheries in the Grande Ronde basin for the 2006-07 run year. Angler effort in hours = Total catch/sampled catch rate in fish per hour. For months with little or no sampling, the average proportion was used. For areas with little or no sampling, data from the survey in closest proximity was used. Does not include the lower Grande Ronde fishery. "-" indicates not sampled or undefined.

	Fishery statistics by month								
Fishery[a], statistics	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
Upper Grande Ronde									
Catch rate	-	-	-	-	-	-	-	-	-
Total catch	-	-	19	-	-	-	-	-	19
Angler effort	-	-	137	-	-	-	-	-	137
Catherine Creek									
Catch rate	-	-	-	-	-	-	-	-	-
Total catch	-	-	-	-	-	-	-	-	0
Angler effort	-	-	-	-	-	-	-	-	0
Rondowa									
Catch rate	-	-	-	-	-	0.154	0.165	0.178	0.161
Total catch	-	15	32	32	58	487	768	299	1,691
Angler effort	-	93	199	199	360	3,162	4,655	1,680	10,348
Wallowa									
Catch rate	-	-	-	-	-	0.078	0.155	0.198	0.139
Total catch	-	-	23	15	19	151	983	215	1,406
Angler effort	-	-	165	108	137	1,936	6,342	1,086	9,774
Wenaha									
Catch rate	-	-	-	-	-	-	-	-	-
Total catch	16	43	-	18	-	-	-	-	77
Angler effort	356	394	-	82	-	-	-	-	832
Middle Grande Ronde									
Catch rate	-	-	-	-	-	-	-	-	-
Total catch	-	19	40	27	27	106	136	21	376
Angler effort	-	137	288	194	194	1,359	877	106	3,155
Upper Grande Ronde									
Total Grande Ronde angler effort (excluding lower Grande Ronde)									24,246

[a] *Wallowa data were used for the upper Grande Ronde, middle Grande Ronde, and Catherine Creek; lower Grande Ronde data, in Flesher et al. 2009, were used for the Wenaha.*

APPENDIX D

Summary of Recycled Steelhead for the 2007-08 Run Year

Appendix Table D. Summary of adult steelhead recycled back to the Wallowa River fishery from the Big Canyon Facility for the 2007-08 run year. "-" indicates not sampled or undefined.

Date of release, Percent of Of release	Location and number of fish[a]							Percent of Release
	Upstream		Downstream		Subtotal			
	M	F	M	F	M	F	Total	
			Released					
7 March 2008	0	0	11	0	11	0	11	
14 March 2008	0	0	10	3	10	3	13	
21 March 2008	0	0	11	9	11	9	20	
28 March 2008	0	0	11	2	11	2	13	
11 April 2008	0	0	13	7	13	7	20	
Subtotal	0	0	56	21				
Total	0		77		56	21	77	
			Recaptured at Big Canyon[b]					
7 March 2008	-	-	3	-	3	0	3	27%
14 March 2008	-	-	4	4	4	4	8	62%
21 March 2008	-	-	3	2	3	2	5	25%
28 March 2008	-	-	5	2	5	2	7	54%
11 April 2008	-	-	11	5	11	5	16	80%
Subtotal	0	0	26	13				
Total	0		39		26	13	39	51%
% of release	0%		51%		46%	62%		
			Observed and estimated (in parentheses) harvest[c]					
7 March 2008	-	-	1(4)	-	1(4)	-	1(4)	36%
14 March 2008	-	-	0	0	0	0	0	0%
21 March 2008	-	-	0	0	0	0	0	0%
28 March 2008	-	-	1(4)	0	1(4)	0	1(4)	31%
11 April 2008	-	-	0	0	0	0	0	0%
Subtotal	0	0	2(8)	0				
Total	0		2(8)		2(8)	0	2(8)	10%
% of release	0%		10%		14%	0%		
			Total recovered (Big Canyon + estimated harvest)					
7 March 2008	-	-	7	0	7	0	7	64%
14 March 2008	-	-	4	4	4	4	8	62%
21 March 2008	-	-	3	2	3	2	5	25%
28 March 2008	-	-	9	2	9	2	11	85%
11 April 2008	-	-	11	5	11	5	16	80%
Subtotal	0	0	34	13				
Total	0		47		34	13	47	61%
% of release	0%		61%		61%	62%		

[a] *Release site was 1.6 km downstream of Deer Creek (Rkm 18) on the Wallowa River.*
[b] *Recaptures of recycled fish were euthanized.*
[c] *Expanded for unsampled fish kept by sampled anglers, unsampled anglers on sample days and unsampled days.*